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a joint venture for professional services

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Technical Memorandum

Date: February 10, 1997

To: NSA Memphis BRAC Cleanup Team

From: Lawson Anderson, E/A&H
Ben Brantley, E/A&H
Robert Smith, E/A&H

Re: Evaluating Potential Sources for BG-5 PCE Contamination

The detection of perchloroethylene (PCE) in the upper and lower fluvial deposits groundwater at background wells BG-5UF and BG-5LF, located near the southwest section of the NSA Northside (shown in Figure 1), indicates a possible source off the NSA property. The background location was selected due to its isolated nature and relative distance from the base's SWMUs. The closest SWMU is the aircraft fire fighting training area (SWMU 5), approximately 700 feet east of the background location. Groundwater at this SWMU flows north-northwest and was found free of PCE during the RFI.

The objective of this investigation is to determine whether the PCE identified at BG-5UF and BG-5LF is attributable to an upgradient release on Navy property. Groundwater samples will be collected initially from five locations (Figure 1) to determine the possible origin of the PCE. As discussed in the January BCT meeting, groundwater samples will be collected at four of these locations from the upper, middle, and lower fluvial deposits (approximate respective depths of 40, 60, and 80 feet) using an in-situ groundwater sampling device driven by a Rotasonic drill rig. A lower fluvial deposits monitoring well is proposed at the fifth location to provide better control for determining groundwater flow direction.

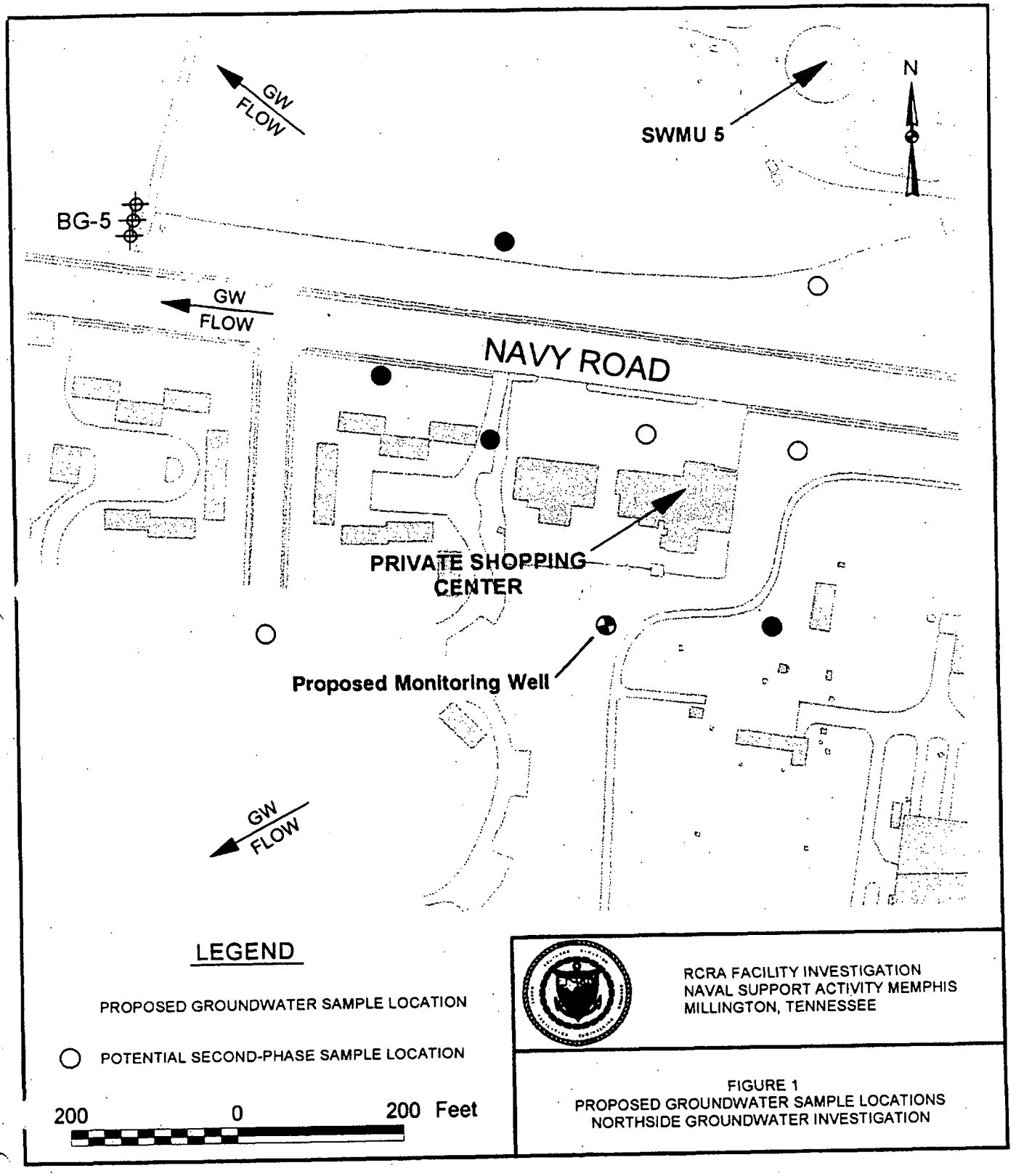
The groundwater samples will be collected during the week of February 10 or February 17, 1997 in conjunction with the Apron Area groundwater investigation. Groundwater samples will be analyzed by a local laboratory for volatile organic compounds (using EPA Method 8240). The laboratory will provide a Level IV quality control data package for data validation.

A preliminary basewide potentiometric map for the fluvial deposits indicates that groundwater flow direction in the vicinity of the shopping center varies considerably. North of Navy Road, it appears to flow to the northwest, along Navy Road it appears to flow to the west, and south of Navy Road it appears to flow to the southwest. It

must be noted that very little water level data for constructing potentiometric maps is available for the NSA Memphis Southside, particularly near this site.

As shown on Figure 1, three of the groundwater sample locations are on Navy property. One is approximately 100 feet southeast of the shopping center, which should provide an indication of water quality upgradient of the shopping center. The second location is approximately 300 feet northwest of the shopping center, across Navy Road in the vicinity of a previous passive soil gas sampling location that indicated the presence of PCE upgradient of the BG-5 well cluster. The third location on Navy property is behind the shopping center along the fence forming the western boundary of the Southside. This is the location for the proposed monitoring well and should be downgradient from the shopping center, if groundwater flow south of Navy Road is to the southwest. The fourth and fifth sampling locations will be placed on City of Millington property west-northwest of the shopping center in what should be a downgradient flow direction.

In the event the groundwater data collected from the five proposed sample locations is inconclusive, the investigation may enter a second phase to better define the source of the PCE. Four additional locations (open circles) that could be sampled are shown in Figure 1.


GW FLOW
SWMU 5
N
BG-5
GW FLOW
NAVY ROAD
PRIVATE SHOPPING CENTER
Proposed Monitoring Well
GW FLOW
LEGEND
PROPOSED GROUNDWATER SAMPLE LOCATION
POTENTIAL SECOND-PHASE SAMPLE LOCATION
200 0 200 Feet
RCRA FACILITY INVESTIGATION
NAVAL SUPPORT ACTIVITY MEMPHIS
MILLINGTON, TENNESSEE
FIGURE 1
PROPOSED GROUNDWATER SAMPLE LOCATIONS
NORTHSIDE GROUNDWATER INVESTIGATION

FAX COVER SHEET

February 10, 1997

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SUBJECT
NSA Memphis RFI
Evaluation Potential Sources for BG-5
PCE Contamination

PAGES
4, including this cover sheet.

COMMENTS
If you have any questions, please contact me or Lawson at 901/372-7962.